

**Dowty  
Rotol  
company profile**



**background products facilities**

Dowty Rotol is the largest company in the Dowty Group Aerospace Division. Situated at Staverton Airport, Gloucester, it employs 3300 people and occupies 77 500 m<sup>2</sup> (834 000 ft<sup>2</sup>) of engineering offices, manufacturing workshops and ancillary services.

The company offers total systems capability over its range of equipment covered in this brochure. Dowty Rotol involvement begins at the design stage, progresses through development and testing, manufacture and assembly, to installation followed by product support.

The Staverton complex possesses comprehensive in-house facilities including computers, testhouses and research laboratories, plating and heat treatment, inspection and quality control to cover every aspect of product development to certification.

### Who we are

The company organisation is shown below

- We specialise in equipment essential to keep aircraft flying
- We have products on most major civil and military aviation programmes.

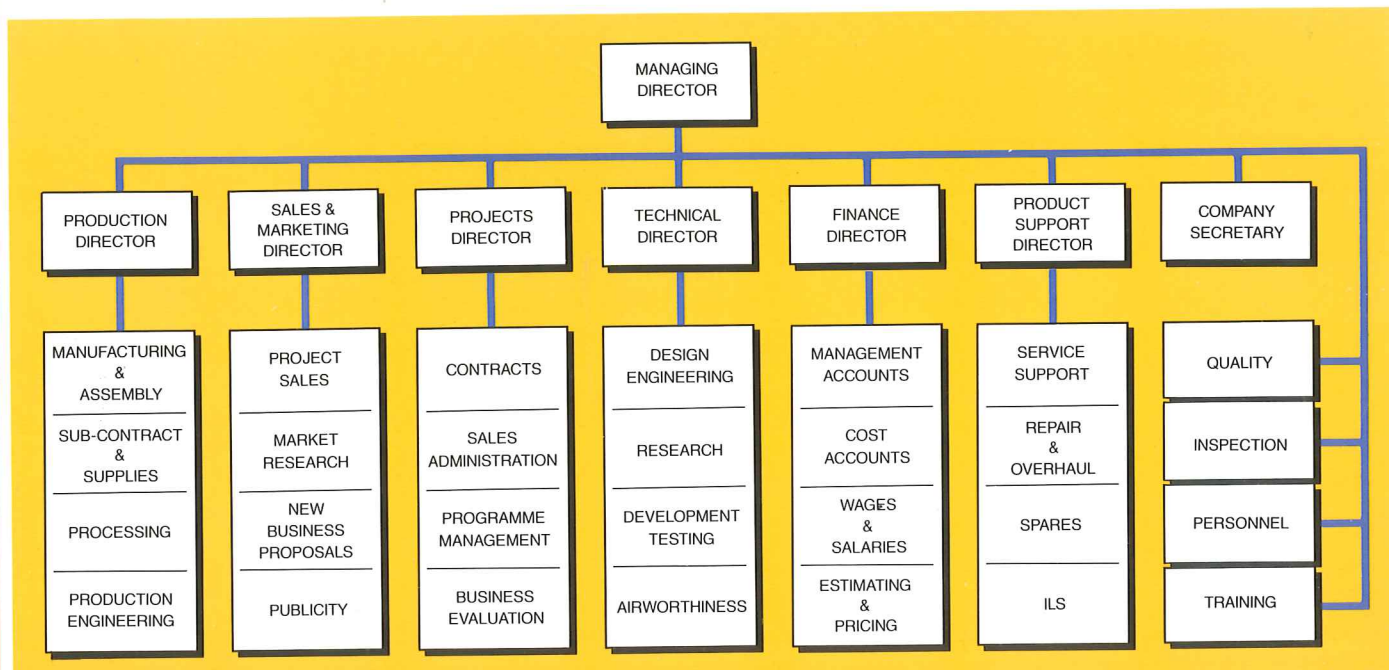
Airbus A330/340



BAe 146



Fokker 50



Company organisation



*Panavia Tornado*



*McDonnell Douglas AV-8B Harrier II*



*BAe EAP*

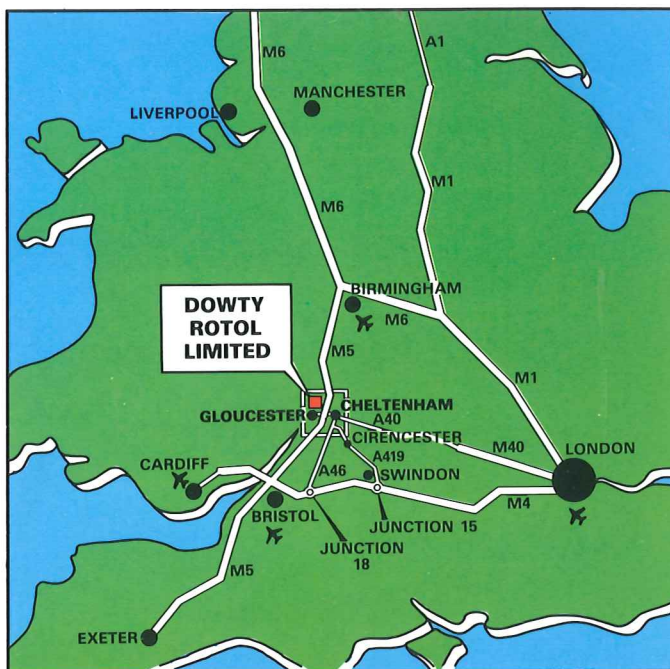
- We are making massive investments towards our future in aerospace.
- We are strong in technical capability for handling advanced projects
- We have a proven success record in multi-national collaboration
- We think, operate and support on a worldwide basis

**Where we are**

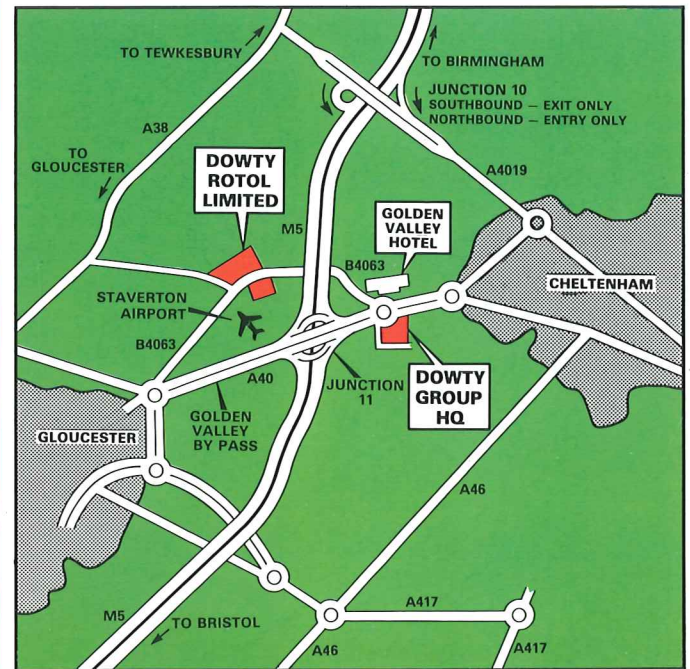
The City of Gloucester is sited at the 'Crossroads of England' between London and Cardiff, Birmingham and Bristol.

From London Airport Heathrow there is a choice of two westward routes via the M4 or M40 motorways as shown in the national map. The average distance is 144 km (90 miles).

After Cheltenham or Gloucester, follow the B4063 from either end of the A40 Golden Valley By Pass. The Dowty Rotol North and South Works lie on either side of the road next to Staverton Airport.



*National map*



*Local map*

**Aircraft landing gear**

Dowty Rotol is a world leader in the design and manufacture of landing gear for civil and military aircraft. For over 50 years more than 200 different types of aircraft have been fitted with 140 000 landing gears. Currently the company's landing gears are fitted to the Airbus A320 (also equipment for the A310 landing gear supplied in collaboration with Messier-Hispano-Bugatti); BAe 146, 748 and ATP; Fokker 50 and 100; Shorts 360 and Piaggio Avanti. Recently the company was selected to manufacture the main landing gear for the Airbus A330/340. Military programmes include the McDonnell Douglas AV-8B Harrier II, Panavia Tornado and the BAe Experimental Aircraft Programme (EAP) forerunner to the Eurofighter project.

**Advanced technology propellers**

Over 186 000 propellers have been produced by Dowty Rotol, exceeding 100 million flying hours in passenger carrying airline service. Advanced technology propellers include those with blades of both metal and composite construction. Latest installations are the Fokker 50, Saab SF340, BAe Jetstream 31, Casa C-212, Piper Cheyenne 400LS and Textron Marine System's air cushion (LCAC) vehicle. Recent developments include the selection of Dowty Rotol composite blade propellers for the Grumman S-2 Tracker re-engining programme and Allison Gas Turbine's T406 propulsion system. The company is also collaborating with GE USA in a joint programme to design, develop and manufacture composite fan blades for the GE36 unducted fan engine (UDF®).

**Actuation systems**

Dowty Rotol specialises in designing and producing complete high lift systems for operating aircraft flaps and slats. The company's flap system for the BAe 146 was the world's first to be signalled, controlled



*Airbus A330/340 main landing gear mock-up*

and monitored by digital electronics. Other systems include the Casa-Nurtanio CN-235 trailing edge flaps and the BAe EAP leading edge slats. The latest new system is the flap actuation system for the Airbus A330/340. Also Dowty Rotol supplies a range of other actuation equipment for many civil and military aircraft, including actuators for: airbrake operation; landing gear retraction; cargo, passenger and landing gear doors; landing gear steering control; and military and submarine weapons handling.



*Fokker 50 propeller*



*BAe 146 flap system*

**Secondary power gearboxes**

Dowty Rotol has been engaged in this field since 1940 producing gearboxes with 20–400 hp power inputs and 3000–20 000 rpm running speeds. Gearbox variants include those for accessory drive and power transfer, also units for landing gear steering, flap actuation and airborne winching. Current aircraft trends require that gearboxes should be driven either by the engine power take-off shaft or by air turbine cross bleed operation as on the BAe EAP and Saab JAS 39.

**Ram air turbines**

These units are used to provide emergency and/or auxiliary power. For emergency usage, the units are deployed in flight to give hydraulic or electric power.

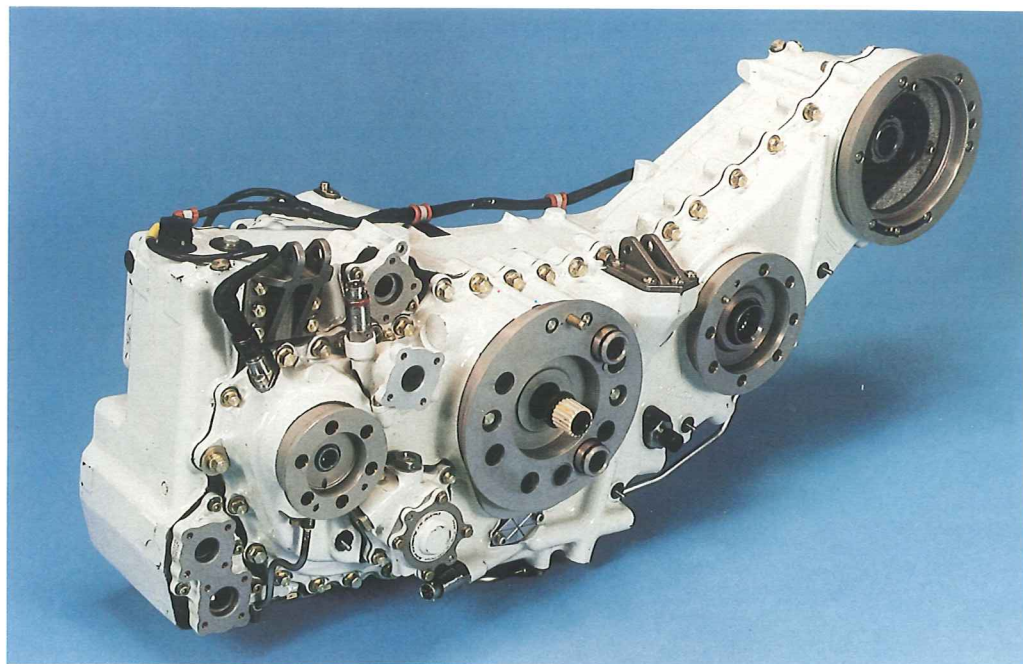
Applications include both civil and military aircraft such as the Airbus A320 and Panavia Tornado ADV. Emergency ram air turbines have been responsible for saving several civil and military aircraft over the years. For auxiliary power, turbines are fitted to target towing pods, flight refuelling units and electronic countermeasure equipment.

**High pressure hydraulics**

The company pioneered the world's first 4000 psi aircraft hydraulic system and a wide range of units has been developed to meet high operating pressure demands of new aircraft. Dowty Rotol offers constructors both individual units and complete systems. With the latter, electronic health monitoring control as on the Saab JAS 39 Gripen is available. Other hydraulic features include manifolded and packaged units for interchangeability and ease of maintenance.

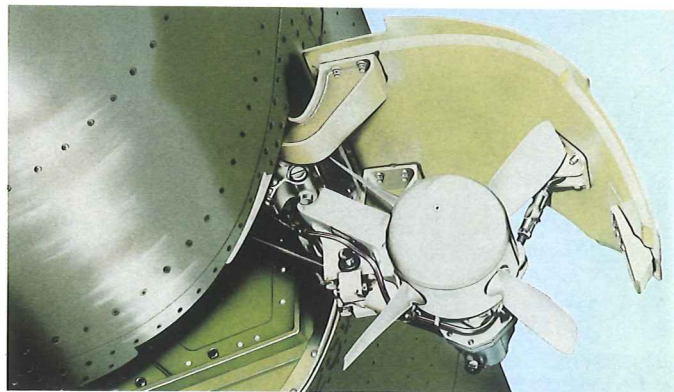
**Military vehicle equipment**

The company is involved with several types of equipment for military applications. Dowty Rotol suspension and shock absorber systems, using aircraft techniques, are available for tanks,



*BAe Experimental Aircraft Programme (EAP) secondary power system gearbox*

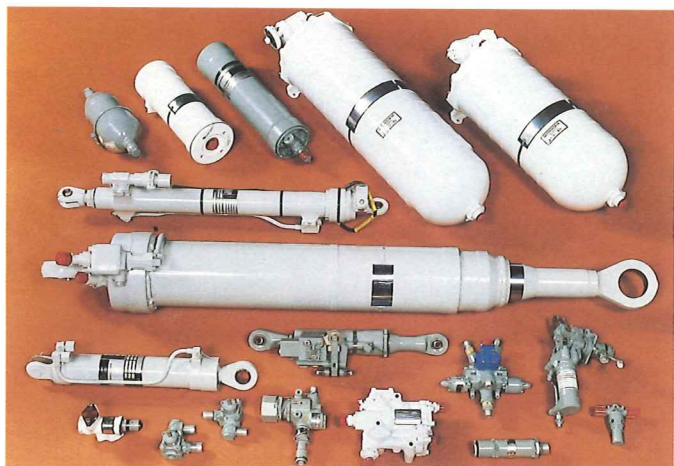
howitzers and armoured vehicles. Other military projects include hydraulic shell handling systems for self-propelled guns and a hydraulically powered/manually operated unit for gun elevation.



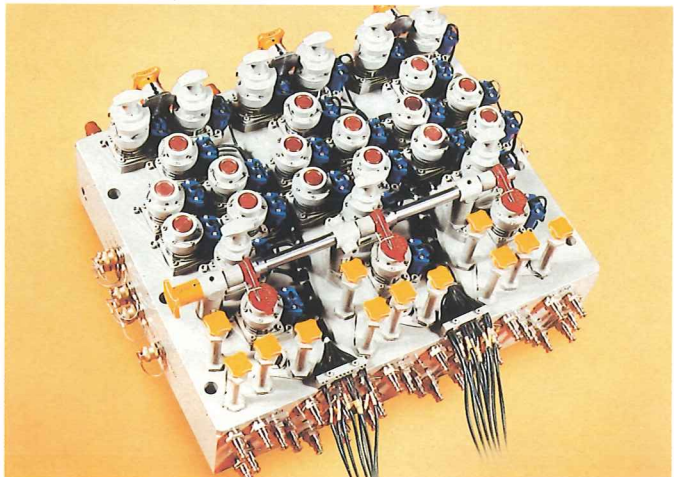
*Panavia Tornado ADV ram air turbine*

**Naval vessel equipment**

Dowty Rotol experience of hydraulics control and actuation has been incorporated in numerous items of equipment used by ships of the world's navies, including Royal Navy submarines. These applications are highly specialised to match arduous marine environmental conditions. Many of the multi-function units are designed to have manual override. The signalling equipment package illustrated is one such hydraulic unit selected from a comprehensive submarine installation.



*Selection of hydraulic units*



*Submarine hydraulics control package*

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These facilities are  
 backed by extensive  
 in-house heat treatment  
 and processing plants  
 supported by close  
 laboratory control.  
 Comprehensive test  
 facilities are available,  
 allowing the qualification  
 of all products to be  
 undertaken in-house.

To ensure the resources  
 are available to meet  
 future demands, continual  
 investments are being  
 made in new factory  
 space, the latest  
 CAM/CIM methods, MRP,  
 CAD/CAE systems, test  
 equipment, quality control  
 equipment and product  
 support facilities.

Combining these facilities  
 with our already extensive  
 manufacturing base will  
 enable the company to  
 meet the production  
 requirements for the civil  
 and military programmes  
 of the 1990's both for  
 quality and quantity, and  
 within the demanding  
 timescales required.



A320 main landing gear on drop test rig

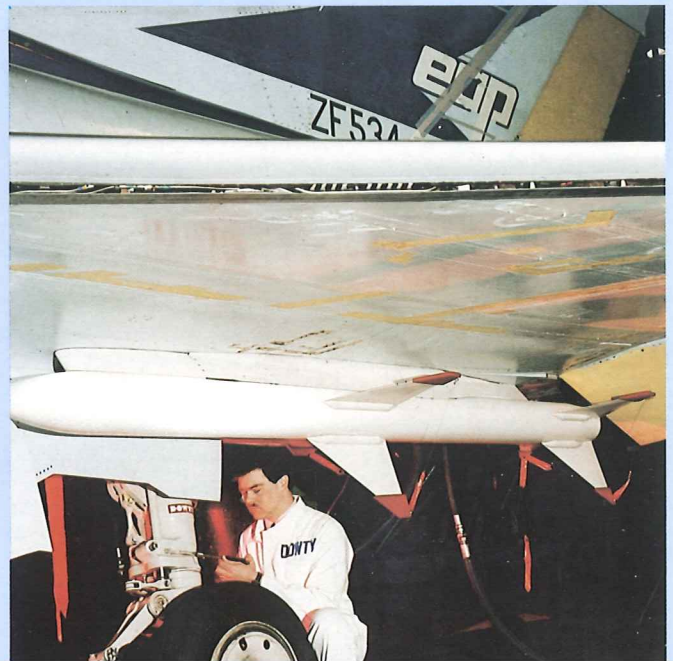
## Product Support Division

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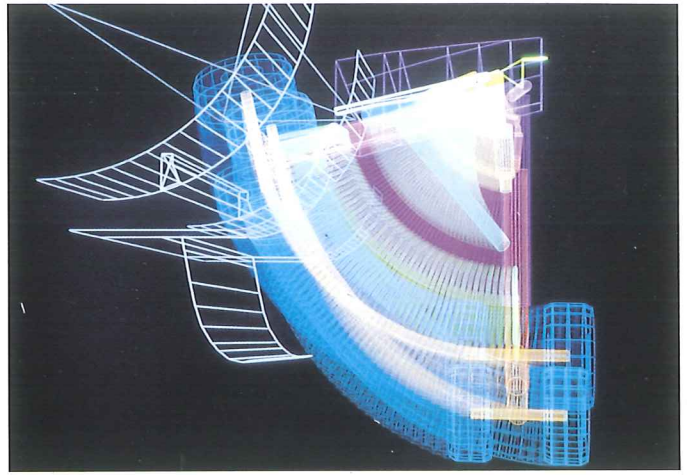
duct Support  
 is currently

Support activities are  
 controlled from Dowty  
 Rotol together with  
 overseas bases at Dowty  
 Canada; Dowty  
 Aerospace Corporation,  
 USA; Dowty Aviation  
 Services, Singapore and  
 Aircraft Accessories and  
 Components, Saudi  
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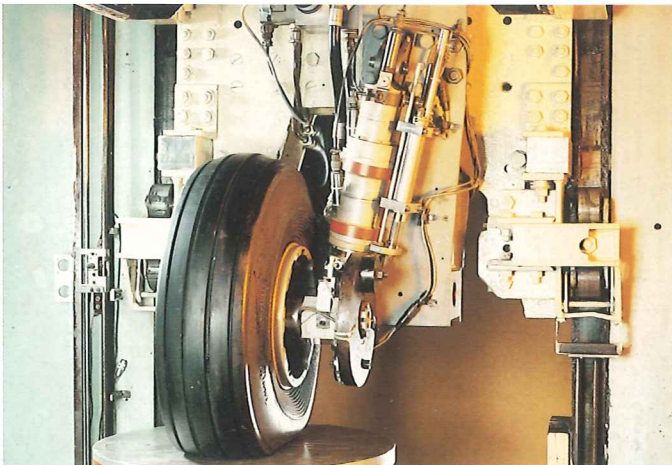




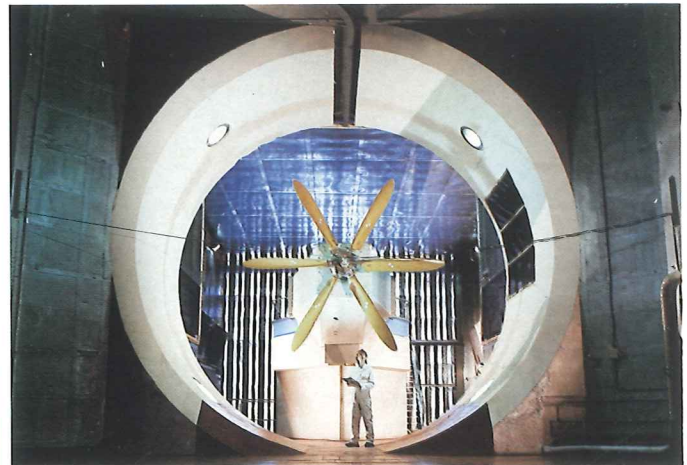
*Computer-aided design*



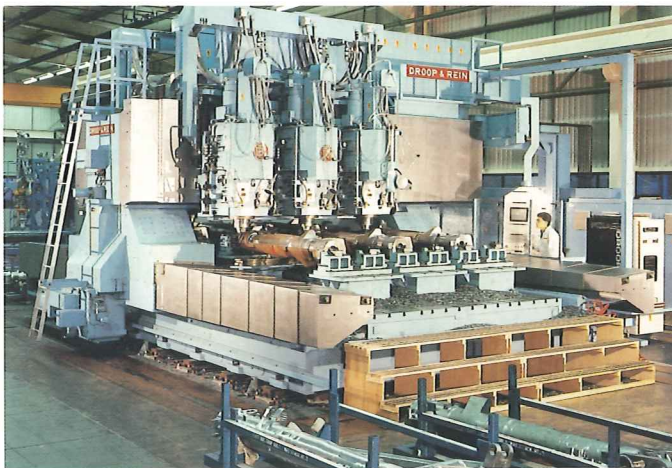
*Computer-aided engineering analysis*



*Landing gear suspension development*



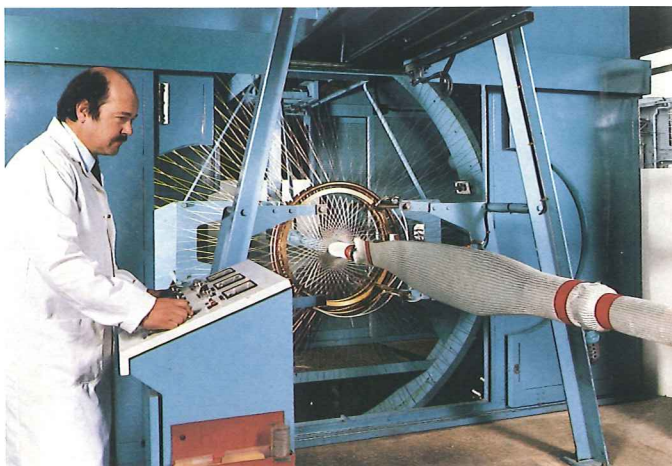
*Fokker 50 propeller on spin test rig*



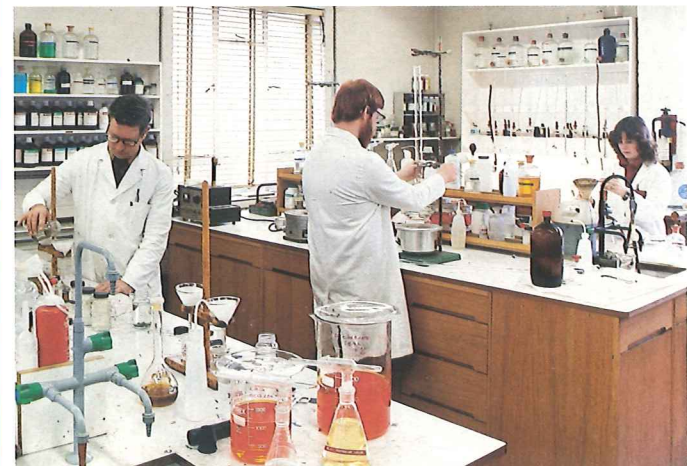
*Profile milling Airbus A320 main leg units*



*Heat treatment*



*Composites technology*



*Chemical & metallurgical laboratories*



**DOWTY**



THE QUEEN'S AWARD FOR  
TECHNOLOGICAL ACHIEVEMENT  
1989

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**Dowty Aerospace Division companies**